

Premier

Gas-Guard
2000
ADDRESSABLE
GAS ALARM PANEL

OPERATING INSTRUCTIONS

TABLE OF CONTENTS

| | |
|--|----|
| INTRODUCTION..... | 3 |
| TECHNICAL DATA..... | 4 |
| CONTROL PANEL..... | 4 |
| DETECTORS..... | 4 |
| WIRING THE DETECTORS..... | 5 |
| FECG2000N / FECG2000L..... | 5 |
| LAE100N / LAE100L..... | 5 |
| TC100N / TC100L..... | 6 |
| DETECTOR ADDRESSING | 6 |
| FECG2000..... | 6 |
| LAE100 & TC100..... | 7 |
| CONTROLS & INDICATIONS..... | 8 |
| CONTROLS..... | 8 |
| USER CONTROLS..... | 8 |
| ENGINEER / MENU CONTROLS..... | 8 |
| INDICATIONS..... | 8 |
| MAIN DISPLAY..... | 8 |
| STATUS LEDS..... | 9 |
| PROGRAMMING MENU LEDS..... | 9 |
| PANEL SET UP..... | 10 |
| INITIAL SET UP..... | 10 |
| DISPLAY SET-UP..... | 10 |
| SELECTING A DETECTOR TO DISPLAY..... | 10 |
| SYSTEM TIME ADJUSTMENT..... | 11 |
| VENTILATION LEVEL SET-UP..... | 11 |
| ALARM LEVEL 1 SETUP..... | 11 |
| ALARM LEVEL 2 SETUP..... | 12 |
| VENTILATION RELAY AUTO / MANUAL SETUP..... | 12 |
| PANEL SELF TEST..... | 12 |
| ACCESSING THE ALARM AND FAULT MENUS..... | 13 |
| ALARM VERIFICATION (EVENT LOG) | 13 |
| FAULT MENU..... | 14 |
| CONNECTIONS..... | 15 |
| GENERAL RECOMMENDATIONS..... | 16 |

INTRODUCTION

The Premier Gas-guard 2000 is specifically designed for use in locations that need to monitor an area for gas leaks, both in industrial & commercial locations.

Typical commercial applications include: -

- School science laboratories
- Offices
- Kitchens
- Hotels

Typical industrial applications include: -

- Gas storage facilities
- Refineries
- Natural gas processing plant
- Gas pipelines & pumping stations

The Gas-Guard 2000 system comprises of a central control panel, and up to 30 addressable detectors. The detectors are connected by 4 wires, 2 for power, 2 for data. The detectors continually transmit their sensor reading to the control panel, which monitors for an increase above the programmed threshold. If the sensor reading exceeds the threshold, the control panel will give an audible warning, display the address of the sensor giving the reading, and activate the appropriate output.

The system is non-latching, so when the gas concentration falls below the threshold level, the detector & panel will reset themselves.

If just the ventilation level is triggered, the ventilation on LED will light, and the ventilation relay will activate.

If the lower alarm level is triggered, The Alarm Led will light, the lower alarm relay will activate, and the panels internal buzzer will sound.

If the higher alarm level is triggered, The Alarm Led will light, the 2 x higher alarm relays will activate, and the panels internal and external buzzers will sound.

Other system features include:-

- Accurate sensor
- 4 wire connection
- Long distance monitoring (up to 1 km with 2.0mm cable)
- High sensitivity & fast response
- Real time report printing
- Battery back-up

TECHNICAL DATA

CONTROL PANEL

| | |
|-------------------|--|
| MODEL | GAS-GUARD 2000 |
| SYSTEM CONNECTION | 4 WIRE (2 X SIGNAL, 2 X DATA) |
| DETECTION GAS | COMBUSTIBLE GAS (NATURAL GAS OR LPG) |
| DETECTION RANGE | 0 – 100% LEL |
| POWER UP TIME | <60 SECONDS |
| RESPONSE TIME | <30 SECONDS |
| ALARM LEVELS | 1 ST ALARM LEVEL 15 20 25 30 35 % LEL 2 ND ALARM LEVEL 30 40 50 60 70 % LEL VENTILATION LEVEL 10 20 30 40 50 % LEL |
| ALARM INDICATION | AUDIO – VISUAL WARNING |
| SOUND LEVEL | >75Db |
| ALARM SIGNAL | 3 X VOLTAGE FREE RELAY (220V AC, 3A MAX) |
| OPERATING TEMP | -10°C to 40°C |
| IP RATING | IP 44 |
| POWER SUPPLY | 220V AC @ 50 Hz |
| MAX DETECTORS | 30 |
| DISTANCE | 1000m USING 2mm ² COPPER WIRE |
| SIZE | 450 X 250 X 100mm (H X W X D) |
| WEIGHT | 9.5 KG |

DETECTORS

| | |
|------------------------|-------------------------------|
| MODEL | TC100N / TC100L |
| SYSTEM CONNECTION | 4 WIRE (2 X SIGNAL, 2 X DATA) |
| OPERATING VOLTAGE | 24V DC |
| WORKING LIFE | 3 YEARS |
| COVERAGE | 20m RADIUS |
| DETECTOR POWER UP TIME | <30 SECONDS |
| DETECTOR RESPONSE TIME | <10 SECONDS |
| OPERATING TEMP | 0°C to 60°C |
| MAX HUMIDITY | <95% RH |
| IP RATING | IP 54 |
| DETECTION GAS | NATURAL GAS / LPG |
| SIZE | 150 X 155 X 60mm (H X W X D) |
| WEIGHT | 860g |
| MODEL | LAE100N / LAE100L |
| SYSTEM CONNECTION | 4 WIRE (2 X SIGNAL, 2 X DATA) |
| OPERATING VOLTAGE | 24V DC |
| WORKING LIFE | 3 YEARS |
| COVERAGE | 20m RADIUS |
| DETECTOR POWER UP TIME | <30 SECONDS |
| DETECTOR RESPONSE TIME | <10 SECONDS |
| OPERATING TEMP | 0°C to 60°C |
| MAX HUMIDITY | <95% RH |
| IP RATING | IP 65 |
| DETECTION GAS | NATURAL GAS / LPG |
| SIZE | 110 X 143 X 65mm (H X W X D) |
| WEIGHT | 370g |
| MODEL | FECG2000N / FECG2000L |
| SYSTEM CONNECTION | 4 WIRE (2 X SIGNAL, 2 X DATA) |
| OPERATING VOLTAGE | 24V DC |
| WORKING LIFE | 3 YEARS |
| COVERAGE | 20m RADIUS |
| DETECTOR POWER UP TIME | <30 SECONDS |
| DETECTOR RESPONSE TIME | <10 SECONDS |
| OPERATING TEMP | 0°C to 60°C |
| MAX HUMIDITY | <95% RH |
| IP RATING | IP 43 |
| DETECTION GAS | NATURAL GAS / LPG |
| SIZE | 40 X 100mm (H X Diameter) |
| WEIGHT | 90g |

WIRING THE DETECTORS

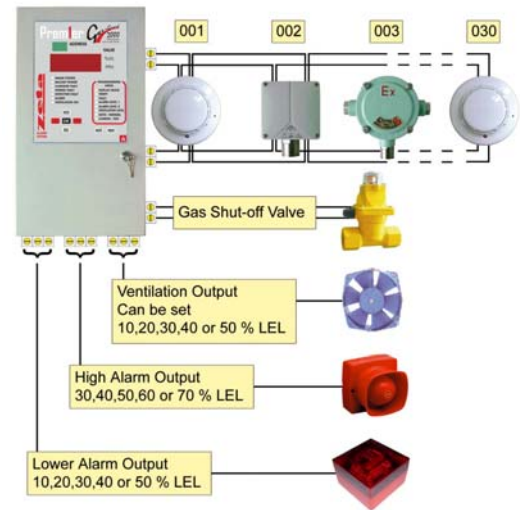
The Gasguard 2000 can connect to 3 families of detectors.

The fyreye range, suitable for domestic & light commercial applications.

The Weatherproof range, suitable for heavy commercial, and light industrial work.

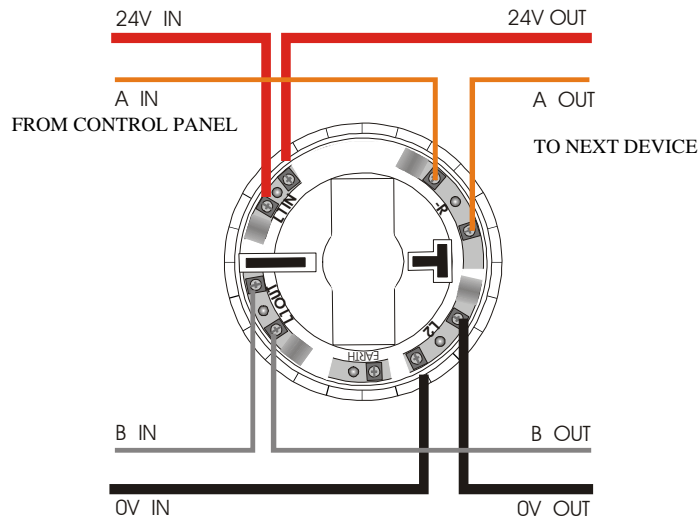
The Explosion-proof range, suitable for use in hazardous areas.

Each family has 2 variants. The “N” model for natural gas (Methane), and the “L” model for LPG



The Detectors are wired as follows:-

FECG2000N / FECG2000L

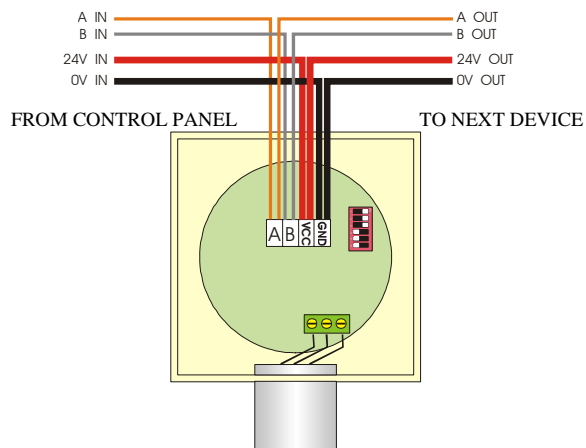


CONNECTIONS

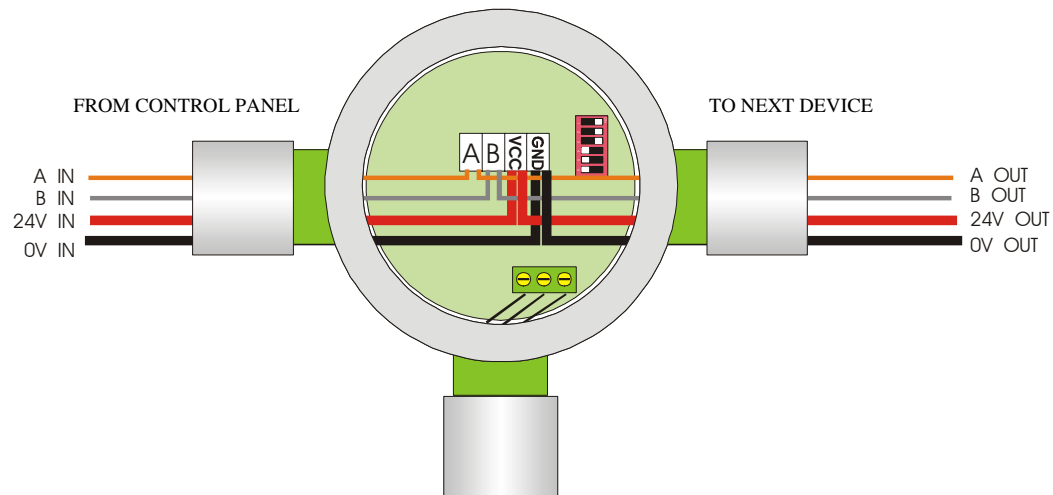
A: -R
B: L1OUT

24: L1IN
0V: L2

LAE100N / LAE100L



TC100N / TC100L



DETECTOR ADDRESSING

FECG2000

The DIP switch settings for the FECG2000 are:-

| ADDRESS | SW1 | SW2 | SW3 | SW4 | SW5 | SW6 |
|---------|-----|-----|-----|-----|-----|-----|
| 1 | ON | OFF | OFF | OFF | OFF | OFF |
| 2 | OFF | ON | OFF | OFF | OFF | OFF |
| 3 | ON | ON | OFF | OFF | OFF | OFF |
| 4 | OFF | OFF | ON | OFF | OFF | OFF |
| 5 | ON | OFF | ON | OFF | OFF | OFF |
| 6 | OFF | ON | ON | OFF | OFF | OFF |
| 7 | ON | ON | ON | OFF | OFF | OFF |
| 8 | OFF | OFF | OFF | ON | OFF | OFF |
| 9 | ON | OFF | OFF | ON | OFF | OFF |
| 10 | OFF | ON | OFF | ON | OFF | OFF |
| 11 | ON | ON | OFF | ON | OFF | OFF |
| 12 | OFF | OFF | ON | ON | OFF | OFF |
| 13 | ON | OFF | ON | ON | OFF | OFF |
| 14 | OFF | ON | ON | ON | OFF | OFF |
| 15 | ON | ON | ON | ON | OFF | OFF |
| 16 | OFF | OFF | OFF | OFF | ON | OFF |
| 17 | ON | OFF | OFF | OFF | ON | OFF |
| 18 | OFF | ON | OFF | OFF | ON | OFF |
| 19 | ON | ON | OFF | OFF | ON | OFF |
| 20 | OFF | OFF | ON | OFF | ON | OFF |
| 21 | ON | OFF | ON | OFF | ON | OFF |
| 22 | OFF | ON | ON | OFF | ON | OFF |
| 23 | ON | ON | ON | OFF | ON | OFF |
| 24 | OFF | OFF | OFF | ON | ON | OFF |
| 25 | ON | OFF | OFF | ON | ON | OFF |
| 26 | OFF | ON | OFF | ON | ON | OFF |
| 27 | ON | ON | OFF | ON | ON | OFF |
| 28 | OFF | OFF | ON | ON | ON | OFF |
| 29 | ON | OFF | ON | ON | ON | OFF |
| 30 | OFF | ON | ON | ON | ON | OFF |

LAE100 & TC100

The DIP switch settings for the LAE100 & TC100 are:-

| ADDRESS | | SW1 | SW2 | SW3 | SW4 | SW5 | SW6 |
|---------|--|-----|-----|-----|-----|-----|-----|
| 1 | | OFF | OFF | OFF | OFF | OFF | ON |
| 2 | | OFF | OFF | OFF | OFF | ON | OFF |
| 3 | | OFF | OFF | OFF | OFF | ON | ON |
| 4 | | OFF | OFF | OFF | ON | OFF | OFF |
| 5 | | OFF | OFF | OFF | ON | OFF | ON |
| 6 | | OFF | OFF | OFF | ON | ON | OFF |
| 7 | | OFF | OFF | OFF | ON | ON | ON |
| 8 | | OFF | OFF | ON | OFF | OFF | OFF |
| 9 | | OFF | OFF | ON | OFF | OFF | ON |
| 10 | | OFF | OFF | ON | OFF | ON | OFF |
| 11 | | OFF | OFF | ON | OFF | ON | ON |
| 12 | | OFF | OFF | ON | ON | OFF | OFF |
| 13 | | OFF | OFF | ON | ON | OFF | ON |
| 14 | | OFF | OFF | ON | ON | ON | OFF |
| 15 | | OFF | OFF | ON | ON | ON | ON |
| 16 | | OFF | ON | OFF | OFF | OFF | OFF |
| 17 | | OFF | ON | OFF | OFF | OFF | ON |
| 18 | | OFF | ON | OFF | OFF | ON | OFF |
| 19 | | OFF | ON | OFF | OFF | ON | ON |
| 20 | | OFF | ON | OFF | ON | OFF | OFF |
| 21 | | OFF | ON | OFF | ON | OFF | ON |
| 22 | | OFF | ON | OFF | ON | ON | OFF |
| 23 | | OFF | ON | OFF | ON | ON | ON |
| 24 | | OFF | ON | ON | OFF | OFF | OFF |
| 25 | | OFF | ON | ON | OFF | OFF | ON |
| 26 | | OFF | ON | ON | OFF | ON | OFF |
| 27 | | OFF | ON | ON | OFF | ON | ON |
| 28 | | OFF | ON | ON | ON | OFF | OFF |
| 29 | | OFF | ON | ON | ON | OFF | ON |
| 30 | | OFF | ON | ON | ON | ON | OFF |

CONTROLS & INDICATIONS

CONTROLS

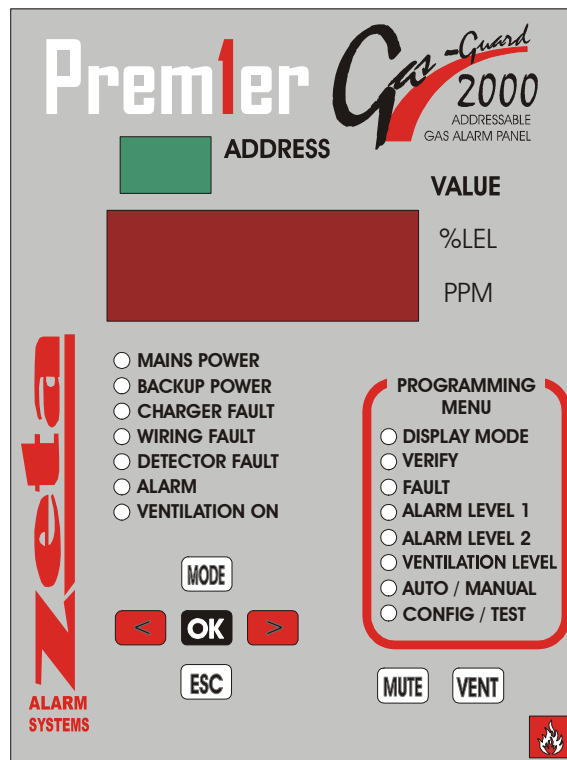
The Gasguard 2000 has the following controls:-

USER CONTROLS

- MUTE – To silence an alarm or fault
- VENT – To manually activate the ventilation relay
(Note: Ventilation relay can NOT be turned off while the gas concentration is above the programmed level)

ENGINEER / MENU CONTROLS

- MODE – Used to access the menus
- PREVIOUS (<) – Used to move to the previous menu option
- NEXT (>) – Used to move to the next menu option
- OK – Used to select the indicated option
- ESC – Used to leave the menus & return to normal operation



INDICATIONS

The Gasguard 2000 has the following indications:-

MAIN DISPLAY

- 2 digit display (Green) – Used to display the address of an alarm, or the option number in the configuration menu

- 4 digit display (RED) – used to display the LEL / PPM value of a device in alarm, or the option name in the menu

STATUS LEDS

- MAIN POWER (green – mains present, yellow – mains fail)
- BACKUP POWER (green – battery present, yellow – battery fault)
- CHARGER FAULT (yellow)
- WIRING FAULT (yellow)
- DETECTOR FAULT (yellow)
- ALARM (flashing red)
- VENTILATION ON (green)

PROGRAMMING MENU LEDS

- DISPLAY MODE – select between clock, specific sensor, or cycle through all sensors
- VERIFY
- FAULT
- ALARM LEVEL 1
- ALARM LEVEL 2
- VENTILATION LEVEL
- AUTO / MANUAL – select between automatic& manual vent shut off
- CONFIG / TEST

PANEL SET UP

INITIAL SET UP

Connect the detectors (up to 30) to the control panel and set their individual addresses

Turn on the mains & battery power

Press menu until CONFIG/TEST LED is on then press ok

Press < or > until display shows 01 SECH (search for detectors) then press OK
(The other options in this menu are 02 SET (select single device to view) and 03 SELL (Self-test & event log clear))

The panel will beep, and programming menu LEDs will light up in sequence while the panel scans for detectors. As the panel finds detectors, the GREEN display the number of detectors configured so far (1st 2nd 3rd etc), and the RED display will show the address of that detector.

DISPLAY SET-UP

The Gasguard 2000 has 3 display items; Cycle between detectors, view 1 detector, or clock. To choose the display setting:-

Press Mode until DISPLAY MODE LED is lit.

Press < or > to select the required display

- | | | |
|----|----|---|
| 01 | CY | Cycle between detectors |
| 02 | LO | Lock on to a specific detector |
| 03 | SH | Clock (Show Hour) –shows day of week (green) & time (red) |

Press OK to select the option

SELECTING A DETECTOR TO DISPLAY

If you want the display to continually show the reading from one detector:-

Press mode until config/test LED is on

Press OK

Press < or > until the red display shows SET

Press OK

Press < or > to select the required sensor.

The panel will allow you to scroll between the configured sensors. It will display the detector address (green) and the current concentration (red)

Press OK to select the channel

Press ESC to exit the menu.

To select a different device, press < or > to scroll between configured addresses

SYSTEM TIME ADJUSTMENT

From the quiescent situation (No menu LEDs on) Press OK 3 times

The green display will show **06**, the red display will show the **year**. Press < & > to adjust then press MODE.

The green display will show **05**, the red display will show the **day of the week**, 01=Monday, 07=Sunday. Press < & > to adjust then press MODE.

The green display will show **04**, the red display will show the **month**. Press < & > to adjust then press MODE.

The green display will show **03**, the red display will show the **date**. Press < & > to adjust then press MODE.

The green display will show **02**, the red display will show the **hour** (24 hour format). Press < & > to adjust then press MODE.

The green display will show **01**, the red display will show the **minutes**. Press < & > to adjust then press MODE.

| GREEN DISPLAY | MEANING | VALID DATA (RED) |
|---------------|-------------|------------------|
| 06 | YEAR | 00 TO 99 |
| 05 | DAY OF WEEK | 01 TO 07 |
| 04 | MONTH | 01 TO 12 |
| 03 | DATE | 01 TO 31 |
| 02 | HOUR | 00 TO 23 |
| 01 | MINUTES | 00 TO 59 |

VENTILATION LEVEL SET-UP

This option is used to determine the gas concentration level that will activate the ventilation relay.

Press Mode until VENTILATION LEVEL LED is lit.

Press < or > to select the required level

- 01 10% LEL
- 02 20% LEL
- 03 30% LEL
- 04 40% LEL
- 05 50% LEL

Press OK to select the option

ALARM LEVEL 1 SETUP

This option is used to determine the gas concentration level that will trigger alarm level 1, and activate the LOWER ALARM RELAY.

Press Mode until ALARM LEVEL 1 LED is lit.

Press < or > to select the required level

- 01 15% LEL
- 02 20% LEL
- 03 25% LEL
- 06 30% LEL
- 07 35% LEL

Press OK to select the option

ALARM LEVEL 2 SETUP

This option is used to determine the gas concentration level that will trigger alarm level 2, and activate TWO HIGHER ALARM RELAYS.

Press Mode until ALARM LEVEL 2 LED is lit.

Press < or > to select the required level

- | | |
|----|---------|
| 01 | 30% LEL |
| 02 | 40% LEL |
| 03 | 50% LEL |
| 08 | 60% LEL |
| 09 | 70% LEL |

Press OK to select the option

VENTILATION RELAY AUTO / MANUAL SETUP

The ventilation relay can be set to AUTOMATICALLY turn itself off after the gas level has fallen below the alarm level, or it can be set to require a MANUAL turn off via the vent button. (ie the vent relay will remain active until reset by the operator.)

Press Mode until AUTO / MANUAL LED is lit.

Press < or > to select the required option

- | | |
|----|---------------------------------|
| 01 | AL = MANUAL (Airing Latch) |
| 02 | AU = AUTOMATIC (Airing Unlatch) |

Press OK to select the option

PANEL SELF TEST

The Gasguard panel can perform a diagnostic self test to verify the operation of the panel components.

Press mode until config/test LED is on

Press OK

Press < or > until the red display shows SELL

Press OK

The Control panel will blink all its LEDS, and its 2 display screens. It will sound its internal buzzer, and its external sounder.

The panel will also clear its Alarm log during this operation.

ACCESSING THE ALARM AND FAULT MENUS

ALARM VERIFICATION (EVENT LOG)

Press menu until VERIFY LED is on, then press OK

The panel is now in Alarm Verification Mode, and ready to display information on previous alarms.

The green display shows the channel that caused the alarm. The red display shows H or L followed by a 3 digit number. The L or H indicates whether the Lower alarm level, or Higher alarm level had been reached. The 3 digits show the concentration reached during alarm.

Pressing > (right) will give the time & date of alarm, 2 bits of information at a time as follows:-

| SCREEN NUMBER | FIRST INFORMATION | SECOND INFORMATION |
|---------------|-----------------------|--------------------|
| 1 | HIGHER OR LOWER ALARM | CONCENTRATION |
| 2 | YEAR | MONTH |
| 3 | DAY | HOURL |
| 4 | MINUTE | SECOND |

Pressing >(right) again will display the next alarm. If there are no more alarms, the Green display will show]] to show that there are no more events, and the red display will show the total number of events. Since the last time the log was cleared.

Eg. 03 (green)

H075(red)
0510
0917
4528

This shows that sensor 03 passed the higher alarm level, and reached a concentration of 75% LEL on 09/10/05 at 17:45:28

If the menu only shows [[and]], then the event log is empty, and no events have occurred since the event log was last cleared.

To clear the event log:-

press menu until config/test LED is lit, and press OK

Press > until SELL is displayed, and press OK

The panel will perform a self test, and clear the event log.

Press ESC to exit menu

FAULT MENU

The Gasguard 2000 has 3 main fault indications; Supply fault (Mains Power, Backup Power & Charger Fault), Wiring Fault & Detector Fault.

The current Detector fault(s) can be examined further by entering the fault menu.

Press Menu until fault LED is on

Press OK

Use < & > to display the active faults. The green display shows the sensor number, and the red display shows the error code.

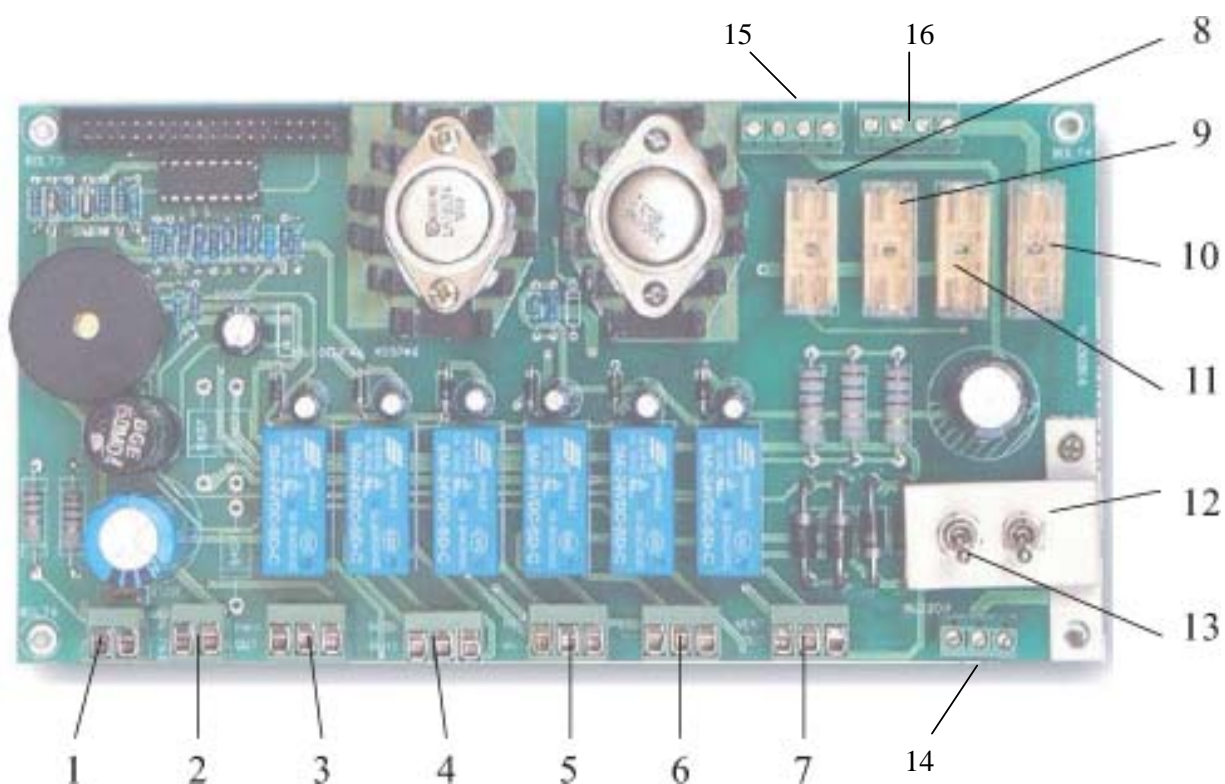
If the only items in the menu are [[and]], then there are no active faults.

The list of error codes are:-

| ERROR CODE | MEANING | ACTION NEEDED |
|------------|----------------------|---------------------------------------|
| 01 | DATA TRANSFER ERROR. | CHECK THE CONNECTIONS TO THE DETECTOR |
| 16 | DETECTOR WARMING UP | WAIT FOR 2 MINUTES |
| 17 | CONTACT DATA ERROR | DEVICE NEEDS REPAIR |
| 19 | SENSOR ERROR | SENSOR NEEDS REPLACING |

If the panel shows WIRING FAULT, 2 minutes after power up, then the system may need a 100 ohm terminating resistor across the A and B terminals of the last detector on the line. This usually occurs on systems with long cable runs.

CONNECTIONS



| ITEM | FUNCTION |
|------|---|
| 1 | COMMUNICATION SIGNAL TO DETECTORS (A & B) |
| 2 | 24V POWER TO DETECTORS |
| 3 | FAULT OUTPUT (VOLT FREE RELAY) |
| 4 | HIGH ALARM OUTPUT 1 (VOLT FREE RELAY) |
| 5 | HIGH ALARM OUTPUT 2 (VOLT FREE RELAY) |
| 6 | LOW ALARM OUTPUT (VOLT FREE RELAY) |
| 7 | VENTILATION OUTPUT (VOLT FREE RELAY) |
| 8 | 24 V MAIN FUSE |
| 9 | 24V BACKUP FUSE |
| 10 | 220 V MAINS FUSE |
| 11 | VOLTAGE OUTPUT FUSE |
| 12 | MAINS POWER SWITCH (UP = ON, DOWN = OFF) |
| 13 | BATTERY BACKUP SWITCH (UP = ON, DOWN = OFF) |
| 14 | MAINS IN (N.E.L.) |
| 15 | 30V DC FROM PSU & BATTERY BACKUP CONNECTION |
| 16 | MAINS TO SWITCH MODE POWER SUPPLY |

GENERAL RECOMMENDATIONS

1. The Gasguard 2000 control panel should be installed in a clean rainproof room where no corrosive gas, soot or excessive dust are present.
2. If the detector is in continuous contact with a high concentration of gas, then the working life of the sensor will be reduced. (Under normal conditions, the sensor will have a working life of at least 2 years)
3. The detectors should be checked every 6 months for correct operation.
4. On larger systems (over 12 detectors), the battery should be turned on first, then the mains turned on after 5 seconds
5. If the backup batteries have been drained flat, (eg in the case of mains failure), then the detectors should be disconnected for 1 hour while the batteries charge.
6. The wiring must be at least 1mm², but for longer distances, use 2mm². This will allow up to 1000m of cable.
7. For longer cable runs, it may be necessary to fit a 100 ohm terminating resistor to the A & B connections of the last detector fitted.

